

In rejecting claim 1, the Examiner states that the admitted prior art (*Bradley*) fails to specifically teach a duplexer with a structure having at least two shunt elements including a first and a second shunt element, wherein the first series element has a first end connected to the first terminal and a second end connected to the third terminal; the second series element has a first end connected to the second terminal and a second end connected to the fourth terminal; the first shunt element has a first end connected to the first terminal and a second end connected to the fourth terminal; and the second shunt element has a first end connected to the second terminal and a second end connected to the third terminal, and wherein each of the series and shunt elements includes an acoustic resonator.

The Examiner points to *Dailing* for disclosing such a structure (circuit 15, Figure 1). The Examiner states that it would be obvious to a person skilled in the art to incorporate the lattice structure of *Dailing* into the ladder-type BAW duplex in the admitted prior art.

Applicant respectfully disagrees with the Examiner for many reasons.

First, the crystal filter elements 14, 16 of *Dailing* are resonators fabricated on a quartz crystal wafer. They are monolithic coupled resonator filters. They are not balanced filters and have nothing to do with bulk acoustic resonators.

Second, *Dailing* is concerned with modifying the filter response in a filter circuit with dual monolithic coupled resonator filters by adding a resistance-capacitance network. While, in one of the embodiments, the resistance-capacitance network has four resistors arranged in a lattice network with each of the resistors being shunted by a capacitor, *Dailing* does not use this lattice network as a balanced lattice filter. In particular, *Dailing* only uses the resistance-capacitance network for changing the shape of the characteristic curve of the bandpass filter circuit from what it would be to closely approximate a Gaussian shape in the passband (col.3, lines 50 – 55). For that reason, *Dailing* specifically states that the lattice network, or any one of the many possible resistance-capacitance coupling arrangements, such as a series resistance-capacitance network, a pi network (see Figure 5), an L network or any combination thereof, can be used for the intended purpose of approximating a Gaussian shape in the passband.

Dailing does not disclose or suggest that the lattice network is used as a balanced filter.

Third, a lattice network with four resistors, each of which is shunted by a capacitor, is a high-loss circuit and, therefore, is not suitable for use as a balanced filter. A person skilled in the

art would not be motivated to combine the teaching in *Dailing* with the ladder-type bulk acoustic filters in *Bradley*.

It is respectfully submitted that the invention as claimed in claim 11 includes two balanced bulk acoustic wave filters. *Bradley* does not disclose or suggest a balanced filter. *Dailing* does not disclose or suggest a balanced filter. Thus, the admitted *Bradley* reference, in view of the cited *Dailing* reference, does not render the invention as claimed in claim 1 obvious.

As for claims 2-4 and 7-11, they are dependent from claim 1 and recite features not recited in claim 1. For reasons regarding claim 1 above, it is respectfully submitted that claims 2-4 and 7-11 are also distinguishable over the cited *Dailing* reference and the admitted *Bradley* reference.

At section 4, claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (*Bradley*) in view of *Dailing*, and further in view of *Ella* (U.S. Patent No. 6,081,171). The Examiner points to *Ella* for disclosing that at least one of the acoustic resonators is a bridge-type bulk acoustic wave device.

It is respectfully submitted that claims 5 and 6 are dependent from claim 1 and recite features not recited in claim 1. For reasons regarding claim 1 above, claims 5 and 6 are also distinguishable over the cited *Dailing* reference and the admitted *Ella* and *Bradley* references.

At section 5, claims 12-14, 20-28, 31 and are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bradley* in view of *Dailing*.

It is respectfully submitted that the invention as claimed in claim 12 includes two balanced bulk acoustic wave filters. *Bradley* does not disclose or suggest a balanced filter. *Dailing* does not disclose or suggest a balanced filter. Thus, the admitted *Bradley* reference, in view of the cited *Dailing* reference, does not render the invention as claimed in claim 12 obvious.

As for claims 13, 14, 20-28, 31 and 32, they are dependent from claim 12 and recite features not recited in claim 12. For reasons regarding claim 12 above, it is respectfully submitted that claims 13, 14, 20-28, 31 and 32 are also distinguishable over the cited *Dailing* reference and the admitted *Bradley* reference.

At section 6, claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bradley* in view of *Dailing* and further in view of *Franca-Neto* (U.S. Patent No. 6,721,544). The Examiner cites *Franca-Neto* for disclosing a transmitter and a receiver.

It is respectfully submitted that claims 15-19 are dependent from claim 12 and recite features not recited in claim 12. For reasons regarding claim 12 above, claims 15-19 are also distinguishable over the cited *Dailing* and *Franca-Neto* references and the admitted *Bradley* reference.

At section 7, claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (*Bradley*) in view of *Dailing*, and further in view of *Ella* (U.S. Patent No. 6,081,171). The Examiner points to *Ella* for disclosing that at least one of the acoustic resonators is a bridge-type bulk acoustic wave device.

It is respectfully submitted that claims 29 and 30 are dependent from claim 12 and recite features not recited in claim 12. For reasons regarding claim 12 above, claims 29 and 30 are also distinguishable over the cited *Dailing* reference and the admitted *Ella* and *Bradley* references.

CONCLUSION

Claims 1-32 are allowable. Early allowance of all pending claims is earnestly solicited.

Respectfully submitted,

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